Trend Study 19B-3-07

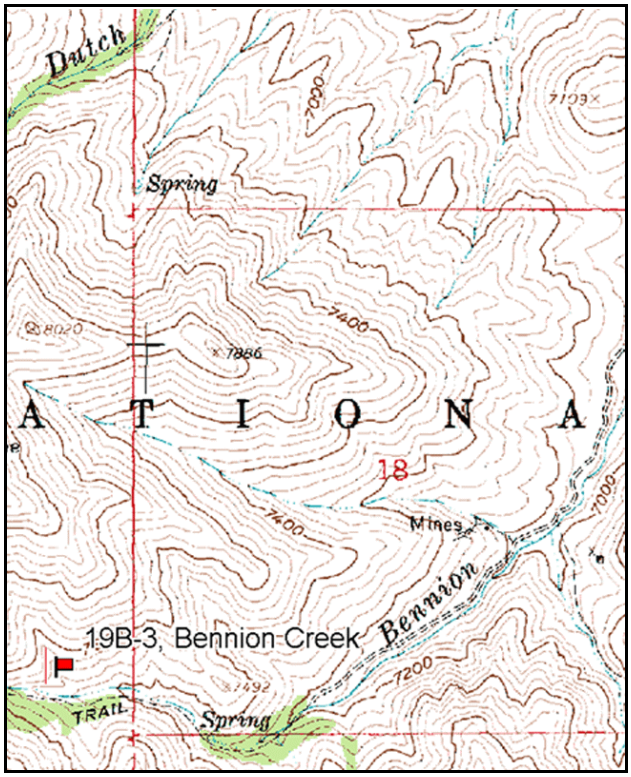
Study site name: Bennion Creek . Vegetation type: Mountain Brush .

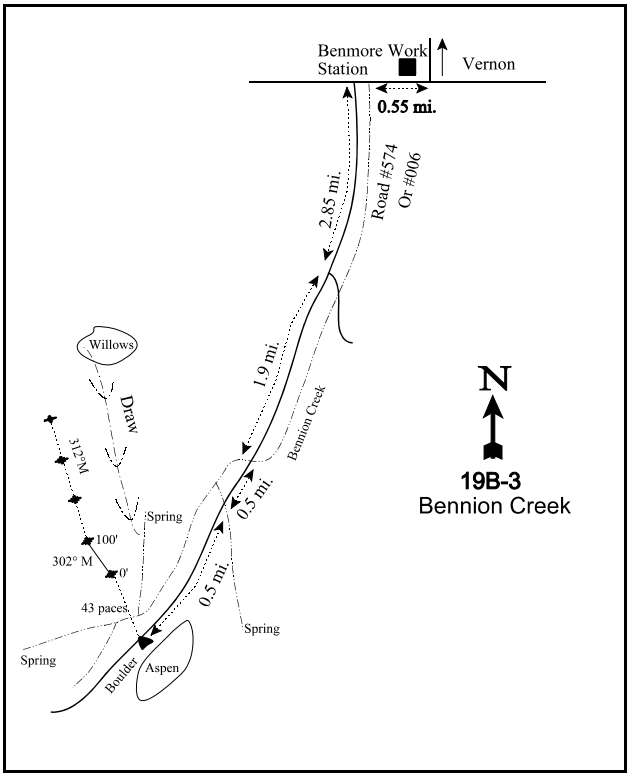
Compass bearing: frequency baseline 302 degrees magnetic (Lines 2-4 @ 312°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 5 on 4ft.

LOCATION DESCRIPTION

From the Benmore Work Station south of Vernon, travel west 0.55 miles to the intersection with the Forest Service road #574 (may have been changed to road #006). Turn left and go south 2.85 miles to a fork. Bear right and go 1.7 miles to where Bennion Creek crosses the road. Proceed 0.5 miles to where a small drainage from a spring crosses the road. Continue up Bennion Creek 0.5 miles to the study site. Vehicle travel may be restricted in this last 0.5 mile. The site is located on a ridge above the point where two springs come together. From the road, the 0-foot baseline stake is 43 paces northwest. A red browse tag, number 3979, is attached to the 0-foot baseline stake.





Map Name: Dutch Peak Diagrammatic Sketch

Township 10S , Range 6W , Section 13 GPS: NAD 83, UTM 12S 375082 E 4423122 N

DISCUSSION

Bennion Creek - Trend Study No. 19B-3

Study Information

This study is typical of deer summer range found on the Sheeprock Mountains [elevation: 7,500 feet (2,286 m), slope: 15%-30%, aspect: east]. The study samples a low-growing, mountain brush community. Bennion Creek, a perennial stream, is located 200 yards (182 m) down the slope to the south. A moderately large aspen stand and dense thickets of chokecherry and serviceberry provide cover nearby. Several deer were observed in the immediate area in 1983 and 2007. In 1997, several cows were observed grazing along Bennion Creek. Wildlife use has been light on the immediate study. From the pellet group tansect, there were an estimated 11 deer days use/acre (28 ddu/ha) in 2002 and 13 deer days use/acre (33 ddu/ha) in 2007. Elk use was estimated at 1 day use/acre (2 edu/ha) in 2002 and 5 days use/acre (12 edu/ha) in 2007. Cattle use was estimated at 21 days use/acre (52 cdu/ha) in 2002 and 9 days use/acre (22 cdu/ha) in 2007. The deer and elk sign appeared to be mostly from spring and early summer. Cattle pats have been one year old, suggesting that the site may be grazed in the fall.

Soil

The study lies within the Podmor-Onaqui-Rock outcrop association, and generally consists of shallow to moderately deep, well-drained soil. Soil depths were 10-23 inches (25-58 cm). Soils in this series formed in colluvium and residuum derived predominantly from quartzite, and are found on mountainsides and ridges (USDA-NRCS 2007). Specifically on the study, the soil has a loam texture and a slightly acidic reactivity (pH of 6.5). It is relatively shallow with angular quartzite rocks on the surface. Some soil movement is apparent, but appears minimal. Abundant vegetation and litter cover are likely to have prevented excessive runoff and soil loss in the past. Vegetation and litter cover both declined and exposed more bare soil and pavement in 2002, then vegetation recovered in 2007. Rock and pavement are abundant and armor the surface, which also helps minimize erosive events. The erosion condition was at the upper limit of stable in 2002, and increased to slight in 2007.

Browse

Utah serviceberry (*Amelanchier utahensis*) and mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) are the key browse species, and together have comprised an average 12% canopy cover since 2002. Serviceberry density increased from 732 plants/acre (1,812 plants/ha) in 1983 to 866 plants/acre (2,144 plants/ha) in 1989, and steadily decreased to 460 plants/acre (1,139 plants/ha) by 2007. Seedlings were measured in 1989, but have not been measured since. However, seedlings were probably present but were not sampled in the transect. This is evidenced by the presence of young plants in all sample years. The density of young plants has declined with each sampling. Decadence increased from 9% in 1983 to a high of 37% in 1997, and then decreased to 0% in 2007. Plants exhibiting poor vigor peaked at 17% of the population in 1997 and decreased to 10% and 4% in 2002 and 2007, respectively. Serviceberry leader growth was not measurable in 2002 or 2007. Browse use was light-moderate in 1983 and 1989, and increased to moderate-heavy in 1997, 2002, and 2007.

The mountain big sagebrush density increased from 532 plants/acre (1,317 plants/ha) in 1983 to 940 plants/acre (2,327 plants/ha) in 1997. The population decreased to 860 plants/acre (2,130 plants/ha) in 2002 and increased to 1,080 plants/acre (2,673 plants/ha) in 2007. Prior to 2007, this was largely a mature and decadent population with few seedling and young plants. However, in 2007 the density of seedlings was estimated at 800 seedlings/acre (1,980 seedlings/ha), and young plants comprised 30% of the population. Sagebrush decadence has ranged from 25% of the population to30%, except in 1989, when no decadent plants were sampled. Plants classified as dying were first sampled in 1997 at 17% of the population, then declined to 6% by 2007. The proportion of the population exhibiting poor vigor peaked in 1997 at 21% of the population, then decreased to 7% in 2007. Annual leader growth averaged 1.1 inches (2.8 cm) in 2002 and 1.5 inches (3.8

cm) in 2007. Crickets were abundant in 2002 and had defoliated many of the sagebrush and low rabbitbrush plants. Browse use has been light-moderate in all sample years.

Mountain snowberry (*Symphoricarpos oreophilus*), although having a lower wildlife preference, is the most abundant browse sampled. It has averaged 9% canopy cover since 2002. Snowberry density increased from 2,466 plants/acre (6,104 plants/ha) in 1983 to approximately 6,000 plants/acre (14,850 plants/ha) in 1989. Since 1989, the population has steadily decreased, and was estimated at 1,980 plants/acre (4,900 plants/ha) in 2007. The decline in density is likely the result of the decrease in young plants that began in 1997. In 1989, young plants comprised 66% of the population. Young plants decreased to 21% in 1997, and 2% in 2002 and 2007. There have been few decadent or dying plants in all sample years. Browse use on snowberry has been mostly light.

There is also a fairly abundant population of mountain lover (*Pachistima myrsinites*). Since 1997, density has ranged from an estimated 600 plants/acre (1,485) to 1,740 plants/acre (4,307 plants/ha). The population is mostly mature and is comprised of short plants that average 4 inches (10.2 cm) in height. Black sagebrush (*Artemisia nova*) has also been sampled at low densities. Other shrubs sampled include: stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*), whorled buckwheat (*Eriogonum heracleoides*), Oregon grape (*Mahonia repens*), and pricklypear cactus (*Opuntia* sp.).

Herbaceous Understory

Perennial grass cover was 16% in 1997, 9% in 2002, and 5% in 2007. Grasses are dominated by a variety of perennial species. These include spike fescue (*Leucopoa kingii*), mutton bluegrass (*Poa fendleriana*), oniongrass (*Melica bulbosa)*, and bluebunch wheatgrass (*Agropyron spicatum*). Cheatgrass (*Bromus tectorum*) was measured in 1997 and 2007, but cover has been less than 1% every sample year. Bulbous bluegrass (*Poa bulbosa*), which has a phenology similar to annual grasses (Stewart and Hull 1949) was sampled in 4% of the quadrats in 2007. Grasses had been heavily grazed by insects in 2002.

Forbs were very diverse and abundant in 1983. From 1989 to 2002, the nested and quadrat frequencies of perennial forbs decreased, and the number of perennial species sampled decreased from 28 to 13. In 2007, there was an increase in nested and quadrat frequencies. Perennial cover decreased from 10% in 1997 to 2% in 2002, then increased to 9% in 2007. The most abundant perennial forb species included wild onion (*Allium* sp.), aster (*Aster* sp.), arrowleaf balsamroot (*Balsamorhiza sagittata*), tapertip hawksbeard (*Crepis acuminata*), and lomatium (*Lomatium* sp.). Annual forb cover increased from less than 1% in 1997 and 2002 to 10% in 2007. Blue-eyed Mary (*Collinsia parviflora*), slenderleaf collomia (*Collomia linearis*), and pale alyssum (*Alyssum alyssoides*) have been the most abundant. Houndstongue (*Cynoglossum officinale*), a noxious weed, was sampled in one quadrat in 2002, but was not sampled in 2007.

1989 TREND ASSESSMENT

The browse trend is slightly up. The density of serviceberry and sagebrush increased 18% and 25%, respectively. Decadence increased for serviceberry and decreased for sagebrush, though there were no dead key browse plants sampled. Browse use remained light-moderate for serviceberry and light for sagebrush. The trend for grass is stable. The sum of nested frequency for perennial grasses increased 4%. The forb trend is stable. The sum of nested frequency of perennial forbs decreased 8%, and there were five fewer species measured. There were significant increases in three forb species and significant decreases in three forb species.

browse - slightly up (+1) grass - stable (0) forb - stable (0)

1997 TREND ASSESSMENT

The browse trend is slightly down. Serviceberry density decreased 19% and sagebrush density increased 41%. Some of the change in density is attributed to the larger area sampled beginning in 1997. However, the

population decadency increased from 15% to 37% for serviceberry and from 0% to 30% for sagebrush. Young plants comprised less of the population for both browse species. The proportion of browse plants exhibiting poor vigor increased and most of those plants were actually classified as dying. Browse use on serviceberry shifted from light-moderate to moderate-heavy. The grass trend is slightly up. The sum of nested frequency of perennial grasses increased 19%. There were significant increases in the nested frequencies of oniongrass and spike fescue. Cheatgrass was sampled in two quadrats. Since annual grasses were not measured in 1983 or 1989, it is not clear if cheatgrass had been present prior to 1997. The forb trend is down. The sum of nested frequency of perennial forbs decreased 36%, including significant decreases in the nested frequencies of eight perennial species. The Desirable Components Index (DCI) score was not calculated for this summer range site.

winter range condition (DCI) - Not applicable, summer range
browse - slightly down (-1) grass - slightly up (+1) forb - down (-2)

2002 TREND ASSESSMENT

The browse trend is stable. Serviceberry density decreased by 11% and sagebrush density decreased by 9%. However, serviceberry and sagebrush decadence decreased to 16% and 28%, respectively. The grass trend is slightly down. The sum of nested frequency of perennial grasses decreased 21%. There were significant decreases in the nested frequencies of mountain brome, oniongrass, and Sandberg bluegrass. Conversely, the nested frequency of bluebunch wheatgrass increased significantly and cheatgrass was not measured. The forb trend is down. The sum of nested frequency of perennial forbs decreased 83%, and that of annual forbs decreased 98%. The number of forb species decreased from 34 to 14, and forb cover decreased from 11% to 2%. Additionally, a noxious weed, common houndstongue, was measured in one quadrat. The DCI score was not calculated for this summer range site.

winter range condition (DCI) - Not applicable, summer range
browse - stable (0) grass - slightly down (-1) forb - down (-2)

2007 TREND ASSESSMENT

The browse trend is slightly up. The density of serviceberry decreased 26%, but sagebrush density increased 26%. Decadence decreased to 0% of the serviceberry population and 9% of the sagebrush population. While there was little to no serviceberry reproduction or recruitment, there were 800 sagebrush seedlings/acre (1,980 seedlings/ha) and young plants comprised 30% of the population. Sagebrush reproduction and recruitment have not been this high in any sample year. In addition, the percentage of plants exhibiting poor vigor decreased for both browse species. The grass trend is down. The sum of nested frequency of perennial grasses decreased 27%, including significant decreases in the nested frequencies of bluebunch wheatgrass, spike fescue, and mutton bluegrass. Cheatgrass was measured again, and bulbous bluegrass (*Poa bulbosa*) was measured for the first time. Both of these cool season grasses are active early in the year and are likely to decrease the available soil moisture for germination and growth of desired species. The trend for forbs is up. The sum of nested frequency of perennial forbs increased more than three-fold and the number of forb species returned to 34. Annual forbs also increased and, for the first time, had a higher nested frequency and cover than perennial forbs. Tapertip hawksbeard increased significantly and common houndstongue was not measured. The DCI score was not calculated for this summer range site.

winter range condition (DCI) - Not applicable, summer range
browse - slightly up (+1) grass - down (-2) forb - up (+2)

HERBACEOUS TRENDS --
Management unit 19B, Study no: 3

Type	Species	Nested Frequency					Average Cover %		
		'83	'89	'97	'02	'07	'97	'02	'07
G	Agropyron spicatum	a49	a48	a70	b147	a51	1.90	2.64	1.00
G	Agropyron trachycaulum	ab13	b14	a1	-	-	.00	-	-
G	Bromus carinatus	bc57	bc53	b33	a3	c86	.36	.03	1.87
G	Bromus tectorum (a)	-	-	a4	-	a8	.03	-	.07
G	Carex sp.	ab11	b26	-	a6	a4	-	.18	.03
G	Elymus junceus	-	-	-	-	3	-	-	.15
G	Leucopoa kingii	b87	b84	c137	bc124	a31	6.78	4.69	.85
G	Melica bulbosa	a26	a26	b109	a22	a54	2.29	.27	.57
G	Phleum pratense	-	-	3	-	-	.03	-	-
G	Poa bulbosa	-	-	-	-	10	-	-	.19
G	Poa fendleriana	b147	b140	b120	b106	a38	3.48	1.40	.43
G	Poa pratensis	a14	a13	a13	-	a1	.36	-	.01
G	Poa secunda	ab13	b29	b31	a6	ab21	.57	.01	.31
G	Stipa lettermani	a5	a7	a5	a1	a3	.06	.00	.01
Total for Annual Grasses		0	0	4	0	8	0.03	0	0.07
Total for Perennial Grasses		422	440	522	415	302	15.86	9.25	5.45
Total for Grasses		422	440	526	415	310	15.90	9.25	5.52
F	Achillea millefolium	a3	-	a3	-	a1	.03	-	.00
F	Agoseris glauca	a5	c69	b23	ab8	a3	.07	.04	.03
F	Alyssum alyssoides (a)	-	-	a79	-	a76	.15	-	1.05
F	Allium sp.	d202	b121	c160	-	a54	.79	-	.27
F	Arabis sp.	-	a6	a1	-	-	.01	-	-
F	Artemisia ludoviciana	a4	a1	a10	a9	a5	.60	.21	.18
F	Astragalus cibarius	b60	b59	a17	-	-	.26	-	-
F	Aster sp.	ab91	c115	b72	a38	a34	1.04	.43	.81
F	Balsamorhiza sagittata	ab18	b26	a5	a3	ab8	.66	.28	1.95
F	Castilleja linariaefolia	a7	a3	a10	-	a2	.05	-	.00
F	Camelina microcarpa (a)	-	-	-	-	2	-	-	.03
F	Calochortus nuttallii	a2	a3	a8	-	-	.02	-	-
F	Chaenactis douglasii	a1	-	a1	-	-	.00	-	-
F	Cirsium sp.	b29	a5	a7	-	a10	.34	-	.10
F	Collomia linearis (a)	-	-	a79	-	a106	.24	-	.46
F	Comandra pallida	ab35	b35	-	ab18	a11	-	.16	.22
F	Collinsia parviflora (a)	-	-	a83	-	b297	.16	-	7.29

Type	Species	Nested Frequency					Average Cover %		
		'83	'89	'97	'02	'07	'97	'02	'07
F	Crepis acuminata	$_{c}$138	$_{c}$140	$_{b}$86	$_{a}$1	$_{b}$59	2.53	.00	1.80
F	Cruciferae	-	-	-	-	4	-	-	.03
F	Cynoglossum officinale	-	-	-	3	-	-	.00	-
F	Delphinium nuttallianum	$_{b}$31	-	$_{a}$13	-	$_{a}$2	.04	-	.00
F	Epilobium brachycarpum (a)	-	-	$_{a}$25	$_{a}$8	$_{b}$39	.07	.04	.28
F	Erysimum asperum	15	-	-	-	-	-	-	-
F	Eriogonum brevicaule	-	-	-	-	3	-	-	.00
F	Erigeron divergens	$_{a}$4	$_{a}$1	$_{a}$8	-	$_{a}$3	.09	-	.03
F	Eriogonum racemosum	$_{b}$49	$_{b}$42	$_{a}$6	$_{a}$12	$_{a}$6	.04	.25	.09
F	Eriogonum umbellatum	$_{b}$40	$_{b}$38	$_{a}$13	$_{a}$3	$_{a}$-	.17	.00	-
F	Fritillaria pudica	2	-	-	-	-	-	-	-
F	Gayophytum ramosissimum(a)	-	-	-	-	7	-	-	.03
F	Hackelia patens	$_{a}$2	-	$_{a}$2	-	-	.00	-	-
F	Holosteum umbellatum (a)	-	-	$_{a}$5	-	$_{a}$2	.01	-	.00
F	Hydrophyllum capitatum	$_{a}$28	-	-	-	$_{b}$56	-	-	1.69
F	Lappula occidentalis (a)	-	-	-	-	5	-	-	.03
F	Lactuca serriola	-	-	$_{a}$2	-	$_{b}$29	.00	-	.25
F	Lithospermum sp.	-	-	$_{a}$-	$_{a}$2	-	.00	.03	-
F	Lomatium sp.	$_{c}$149	$_{c}$163	$_{b}$59	-	$_{a}$24	.91	-	1.06
F	Lupinus caudatus	$_{b}$59	$_{a}$23	-	-	$_{a}$6	-	-	.18
F	Lupinus sericeus	$_{c}$29	$_{bc}$19	$_{ab}$11	$_{ab}$2	$_{a}$-	.33	.15	.01
F	Machaeranthera canescens	$_{a}$6	$_{a}$1	$_{a}$11	-	$_{a}$3	.03	-	.15
F	Microsteris gracilis (a)	-	-	$_{a}$20	-	$_{a}$18	.05	-	.13
F	Orobanche uniflora	$_{a}$2	-	-	-	$_{a}$7	-	-	.04
F	Phlox longifolia	$_{a}$17	$_{a}$32	$_{a}$18	-	$_{a}$20	.21	-	.17
F	Polygonum douglasii (a)	-	-	$_{a}$67	-	$_{a}$49	.22	-	.31
F	Senecio integerrimus	$_{a}$7	$_{b}$43	$_{b}$44	$_{a}$3	$_{a}$6	.54	.03	.07
F	Tragopogon dubius	-	$_{a}$1	$_{a}$1	-	-	.03	-	-
F	Veronica biloba (a)	-	-	$_{a}$8	-	$_{a}$3	.01	-	.00
F	Wyethia amplexicaulis	-	$_{ab}$3	$_{b}$21	$_{a}$1	$_{a}$-	.91	.15	.03
Total for Annual Forbs		0	0	366	8	604	0.92	0.04	9.64
Total for Perennial Forbs		1035	949	612	103	356	9.78	1.75	9.23
Total for Forbs		1035	949	978	111	960	10.72	1.79	18.88

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 19B, Study no: 3

Type	Species	Strip Frequency			Average Cover %		
		'97	'02	'07	'97	'02	'07
B	Amelanchier utahensis	32	28	20	3.65	3.19	3.10
B	Artemisia nova	8	1	1	.44	-	.03
B	Artemisia tridentata vaseyana	40	34	39	4.48	3.56	3.44
B	Chrysothamnus viscidiflorus viscidiflorus	4	3	5	.38	.03	1.00
B	Eriogonum heracleoides	18	27	21	.27	1.31	.51
B	Juniperus osteosperma	1	0	0	-	-	-
B	Mahonia repens	16	3	14	.75	.04	.42
B	Opuntia sp.	3	5	6	.15	.54	.38
B	Pachistima myrsinites	21	26	13	.70	.87	.23
B	Rosa woodsii	21	7	7	1.88	.21	.39
B	Salix bebbiana perrostrata	0	0	0	-	-	.85
B	Symphoricarpos oreophilus	68	61	56	9.90	6.23	8.05
B	Tetradymia canescens	0	1	0	-	-	-
Total for Browse		232	196	182	22.63	16.02	18.44

CANOPY COVER, LINE INTERCEPT --
Management unit 19B, Study no: 3

Species	Percent Cover	
	'02	'07
Amelanchier utahensis	5.16	6.84
Artemisia tridentata vaseyana	5.08	7.91
Chrysothamnus viscidiflorus viscidiflorus	.13	.45
Eriogonum heracleoides	1.00	1.21
Mahonia repens	.01	.20
Opuntia sp.	.45	.75
Pachistima myrsinites	.25	.43
Rosa woodsii	.21	.95
Salix bebbiana perrostrata	-	.16
Symphoricarpos oreophilus	8.03	9.71

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 19B, Study no: 3

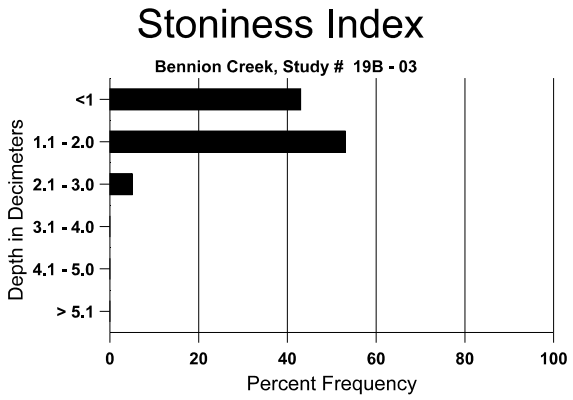
Species	Average leader growth (in)	
	'02	'07
Artemisia tridentata vaseyana	1.1	1.5

BASIC COVER --
Management unit 19B, Study no: 3

Cover Type	Average Cover %				
	'83	'89	'97	'02	'07
Vegetation	3.50	8.50	49.18	26.78	43.98
Rock	12.00	10.25	12.07	15.73	12.13
Pavement	2.50	13.75	5.51	15.27	13.27
Litter	55.50	52.75	50.44	32.01	18.13
Cryptogams	0	0	.17	0	.00
Bare Ground	26.50	14.75	7.03	27.78	20.61

SOIL ANALYSIS DATA --
Herd Unit 19B, Study no: 3, Bennion Creek

Effective rooting depth (in)	Temp °F (depth)	pH	Loam			%0M	ppm P	ppm K	dS/m
			%sand	%silt	%clay				
12.2	56.8 (13.2)	6.5	43.3	30.7	26.0	4.5	12.3	307.2	.6



PELLET GROUP DATA --
Management unit 19B, Study no: 3

Type	Quadrat Frequency		
	'97	'02	'07
Rabbit	1	-	-
Elk	1	-	-
Deer	8	5	1
Cattle	5	10	5

Days use per acre (ha)	
'02	'07
-	-
1 (2)	5 (12)
11 (28)	13 (33)
21 (52)	9 (22)

BROWSE CHARACTERISTICS --
Management unit 19B, Study no: 3

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Amelanchier utahensis												
83	**732**	-	400	266	66	-	45	0	9	-	0	33/21
89	**866**	66	400	333	133	-	46	0	15	-	0	34/19
97	**700**	-	60	380	260	80	49	43	37	17	17	33/35
02	**620**	-	40	480	100	20	32	65	16	10	10	34/35
07	**460**	-	20	440	-	80	26	52	0	-	4	42/42
Artemisia nova												
83	**132**	-	66	66	-	-	0	0	0	-	0	14/23
89	**0**	-	-	-	-	-	0	0	0	-	0	-/-
97	**240**	-	-	180	60	-	17	0	25	17	25	12/22
02	**60**	-	-	60	-	-	0	0	0	-	0	8/26
07	**100**	-	-	100	-	20	0	0	0	-	0	10/26
Artemisia tridentata vaseyana												
83	**532**	-	133	266	133	-	38	0	25	-	0	21/51
89	**666**	-	66	600	-	-	10	10	0	-	10	21/35
97	**940**	-	20	640	280	360	21	0	30	17	21	24/39
02	**860**	-	80	540	240	240	28	14	28	16	16	19/35
07	**1080**	800	320	660	100	120	41	6	9	6	7	22/38
Chrysothamnus viscidiflorus viscidiflorus												
83	**0**	-	-	-	-	-	0	0	0	-	0	-/-
89	**133**	-	-	133	-	-	0	0	0	-	0	16/10
97	**80**	-	-	60	20	-	0	0	25	25	25	16/28
02	**60**	-	-	60	-	-	0	0	0	-	33	10/15
07	**100**	-	-	100	-	-	0	0	0	-	0	11/19
Eriogonum heracleoides												
83	**0**	-	-	-	-	-	0	0	0	-	0	-/-
89	**0**	-	-	-	-	-	0	0	0	-	0	-/-
97	**680**	60	140	520	20	-	0	0	3	3	3	12/13
02	**980**	-	-	920	60	40	12	8	6	-	2	6/13
07	**660**	20	40	620	-	-	18	3	0	-	0	6/14

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Juniperus osteosperma												
83	**0**	-	-	-	-	-	0	0	-	-	0	-/-
89	**0**	-	-	-	-	-	0	0	-	-	0	-/-
97	**40**	-	-	40	-	-	0	0	-	-	0	-/-
02	**0**	-	-	-	-	-	0	0	-	-	0	-/-
07	**0**	-	-	-	-	-	0	0	-	-	0	-/-
Mahonia repens												
83	**0**	-	-	-	-	-	0	0	-	-	0	-/-
89	**0**	-	-	-	-	-	0	0	-	-	0	-/-
97	**1920**	-	640	1280	-	-	0	0	-	-	0	4/6
02	**120**	-	-	120	-	-	0	0	-	-	0	2/3
07	**1900**	-	80	1820	-	-	11	0	-	-	0	4/5
Opuntia sp.												
83	**0**	-	-	-	-	-	0	0	-	-	0	-/-
89	**0**	-	-	-	-	-	0	0	-	-	0	-/-
97	**140**	-	-	140	-	-	0	0	-	-	0	8/32
02	**120**	-	-	120	-	-	0	0	-	-	0	6/33
07	**160**	-	-	160	-	-	0	0	-	-	0	5/17
Pachistima myrsinites												
83	**733**	-	-	733	-	-	0	0	-	-	0	5/4
89	**133**	533	133	-	-	-	0	0	-	-	0	-/-
97	**1560**	40	380	1180	-	-	0	0	-	-	0	5/12
02	**1740**	-	-	1740	-	-	14	10	-	-	0	4/7
07	**600**	60	60	540	-	-	13	3	-	-	0	4/11
Rosa woodsii												
83	**0**	-	-	-	-	-	0	0	0	-	0	-/-
89	**0**	-	-	-	-	-	0	0	0	-	0	-/-
97	**1140**	260	740	340	60	-	0	0	5	2	2	12/17
02	**820**	-	100	720	-	-	27	0	0	-	0	5/6
07	**660**	-	-	660	-	-	9	0	0	-	0	13/10
Symphoricarpos oreophilus												
83	**2466**	-	1066	1400	-	-	0	0	0	-	0	24/21
89	**5999**	133	3933	1533	533	-	3	0	9	-	2	30/31
97	**3620**	20	760	2580	280	-	16	1	8	4	8	16/29
02	**2980**	-	60	2720	200	-	0	0	7	2	17	14/22
07	**1980**	-	40	1920	20	-	5	1	1	-	10	15/32

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Tetradymia canescens												
83	**0**	-	-	-	-	-	0	0	-	-	0	-/-
89	**0**	-	-	-	-	-	0	0	-	-	0	-/-
97	**0**	-	-	-	-	-	0	0	-	-	0	-/-
02	**20**	-	-	20	-	-	0	0	-	-	0	-/-
07	**0**	-	-	-	-	-	0	0	-	-	0	-/-